CONTENTS

FEDERAL FACILITY ESI REVIEW FORM
KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE

EPA REGION II

Federal Facility Name:	Knolls Atomic Power Laboratory (KAPL) - Kesselring Site
Aliases:	None
EPA ID:	NY5890008993
Address:	Atomic Project Road
City:	West Milton
State:	New York

1. Provide the names of the documents reviewed and the organizations responsible for their preparation.

   a. Environmental Monitoring Reports, Knolls Atomic Power Laboratory, US Department of Energy, 1985-1992.

   b. Preliminary Assessment, Knolls Atomic Power Laboratory, Kesselring Site, US Department of Energy, April 1988.

   c. Final Draft, Federal Facility Site Inspection Review, Knolls Atomic Power Laboratory, Kesselring Site, prepared by NUS Corporation for the US Environmental Protection Agency, February 1991.

   d. Expanded Site Inspection, Knolls and Kesselring Sites, Knolls Atomic Power Laboratory, prepared by McLaren-Hart Environmental Engineering Corporation for the US Department of Energy, July, 1993.

   e. Kesselring Hydrogeologic References, 2 Volumes, provided by KAPL, undated.

2. Federal Facility Recommendation: Site Evaluation Accomplished
   Check One: X Agree (Go to Line 7)
   o Disagree (Go to Line 3)
   o No Priority Given (Go to Line 4)

3. If disagree, why?

   Not applicable

4. Is the information adequate to provide a recommendation

   X Yes (Go to Line 6) o No (Go to Line 5)

5. If the information is not adequate, check the type of information needed to complete the ESI Review, then go to Line 7.

The information is adequate to complete the PA/SI Review.

6. Is there sufficient environmental sampling data to support the migration assessment and to evaluate any potential imminent health threat?

X Yes
o No

7. Recommendation: Site Evaluation Accomplished (SEA)

Additional data evaluated by EPA is from DOE's Expanded Site Inspection (July 1993) as well as from DOE's Environmental Monitoring Program. This monitoring program includes surface water, groundwater, and air sampling. Based upon this data, the site was evaluated in accordance with the requirements of 40 CFR Part 300 (Hazard Ranking System; Final Rule) as published in the Federal Register on December 14, 1990. The site evaluation was below the threshold for CERCLA action.

FEDERAL FACILITY ESI REVIEW
KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE

EPA REGION II
SITE DESCRIPTION

General Description and Location

The Knolls Atomic Power Laboratory (KAPL) Kesselring Site (CERCLIS NO. NY5890008993) is a 3,900-acre research and development facility located near the Town of West Milton, Saratoga County, New York. The surrounding area is a rural, sparsely populated region of wooded lands. Access to the main building facilities is restricted by a six foot chain-link fence and "No Trespassing" signs are posted on open land areas. The facility maintains a 24-hour security surveillance. Figure 1 depicts the regional location of the site and Figure 2 depicts a detailed site sketch (Ref. 1, p. 4).

The KAPL Kesselring site is owned by the U.S. Department of Energy (DOE) and until recently has been operated by the General Electric Company (Martin Marietta is the current operator). The facility is fully dedicated to the design and support of reactor plants used in U.S. Naval nuclear power ships. Construction of the site began in 1949 with the installation of a single-prototype nuclear reactor. Currently, there are four pressurized-water naval nuclear plants and support facilities including administration offices, training facilities, equipment service buildings, a boiler house, cooling towers and sewage treatment facilities. As a result of its operations, releases of chemical wastes and radioactive materials have occurred at the site. Accumulations of lead occurred as a result of operating two firing ranges at the site. The facility holds several air emission permits, an interim RCRA permit, a SPDES permit, a chemical storage permit, a petroleum storage permit, a solid waste management facility permit and several radionuclide air emission permits. The radionuclide air emission permits are administered by the USEPA Region II. The rest of the permits are administered by the New York State Department of Environmental Conservation (NYSDEC) (Ref. 1, pp. 4-10; 2, pp. 2-3).

Chemical wastes were reportedly disposed of at four locations within the site boundaries. These locations have been identified as the Swan School Road Cellar, the Silo Area, the Parkis Mills Road Cellar, and the current landfill known as the Hogback Road. An additional area, the Baptist Hill Road Landfill, was not evaluated since there is no documented evidence that hazardous wastes were disposed of there. Battery acid from lead acid batteries was disposed of in the cellar of a former farmhouse on Swan School Road in the mid-1950's. It is estimated that 3,000 pounds of battery acid were disposed of in this area. According to the 1986 KAPL Installation Assessment Report, the Swan School Road area was leveled years ago and is no longer visible. The Silo Area, located on Lee Road, was used for burning sodium and waste oil and for the disposal of components potentially contaminated with mercury from 1958 to 1966. It is estimated that 50 pounds of mercury were disposed of in the Silo Area. The Parkis Mills Road was used for disposal of battery acid. Reportedly, 6,000 pounds of battery acid were disposed of in this area around 1960. The current landfill located on Hogback Road has been

in operation since the early 1950's. Wastes reported to have been disposed of in this area include asbestos scraps, sheets and wool, oil, oily water, paint, unspecified solvents, neutralized chemicals, scrap metals and laboratory analysis wastes. It is estimated that 115 tons of waste were disposed of in this area (Ref. 1, pp. 9-15).

Radioactive residues from past operations exist at two on-site locations, the Silo Area and the Security Area. The radioactivity at the Silo Area is the result of waste processing operations conducted there in the 1950's and 1960's. Reportedly, 150 cubic yards of soil containing radioactivity remain in this area. The predominant radionuclides are cobalt-60 and cesium-137. Based on the information available, 0.05 curies of radioactivity remain in this area, which is less than the amount of naturally occurring radioactivity (Ref. 1, pp. 9-10, 13 and 25).

The radioactivity at the Security Area is the result of the operations of the four prototype pressurized-water nuclear propulsion plants. Reportedly, a leakage of a water holding tank containing tritium has resulted in soil and groundwater contamination (Ref. 1, p. 25, 30).

Two firing ranges were identified at the site for weapons training. Near the Baptist Hill Road disposal area, a hillside has been used as a backstop resulting in lead accumulation. This range has been used since 1980. The estimated total lead accumulations in the existing range is approximately 2,000 to 3,000 pounds. The other range, adjacent to the Hogback Road landfill was used from 1968 to 1980. It is estimated that 200 pounds of lead accumulated in this area (Ref. 1, pp. 9-10, 31).

KAPL has been conducting an extensive environmental monitoring program at the Kesselring site. This program is designed to determine the effect of past and current site operations on the environment and public health. The program includes routine collection and radioactivity analysis of water samples, sediments and fish from the Glowegee Creek and continuous monitoring of radiation levels at the perimeter and off-site locations. The groundwater program also includes groundwater monitoring in and around the current landfill, the four former disposal areas and the site well field. The results of the environmental monitoring program are presented in the Environmental Monitoring Reports (EMR) published by KAPL every year (Ref. 2, pp. 2-13).

EVALUATION OF EXISTING INFORMATION

Existing information and analytical data was used to perform a hazard assessment for the site. The Federal Facility Site Inspection Review (1991)(Reference 1), the Environmental Monitoring Reports (1990, 1992)(References 2 and 21), the various hydrogeologic reports (References 3, 4, 6, and 25), the Preliminary Site Assessment Report - Baptist Hill Road Landfill (Reference 22), and the results of the Expanded Site Inspection (Reference 24) provided the supporting documentation. These evaluations indicate that the groundwater and surface water pathways are the major pathways of concern due to the use of groundwater for drinking water purposes and the presence of fisheries and sensitive environments within the target distance limits (TDLs). Analytical results indicate that while all radioactive contamination is comparable to background levels, there were elevated levels of organic and inorganic contamination in on-site monitoring wells near the Security Area and Hogback Road Landfill (References 2 and 21). Additional information was obtained from federal, state, and local agencies to verify the target information

(References 5, 7, and 9-20). A site visit was also performed to verify waste source containment features and the locations of sampling locations.

HAZARD ASSESSMENT

The existing information and additional data collected were used to evaluate the site and assess the need for CERCLA remedial action. The hazards that the site poses to the groundwater, surface water, soil exposure, and air migration pathways are detailed in the paragraphs below.

Groundwater Pathway

The Kesselring site is underlain by glacio-lacustrine, fluvial and till derived fluvial sand, gravel and till, which reaches thicknesses of up to 145.0 feet at the well located adjacent Kayaderosseras Creek. Surficial mapping indicates that the majority of the 3,900 acre site is underlain by low permeability lake and till deposits. Water-bearing sand and gravel deposits are located along the trace of Kayaderosseras Creek, from which project site groundwater supplies are withdrawn. The site well field produces from two surficial aquifer units separated by a confining clay (lacustrine) layer. The upper surficial aquifer unit is under water table or unconfined conditions whereas the lower artesian aquifer is confined or artesian. The wellfield serves 2,600 employees of the facility (Ref. 3; pp. 1-7; 4, pp. 1-7; 6, pp. 1-10).

The site surficial deposits (and aquifers) are in turn underlain by the bedrock aquifer, which locally consist of shale, sandstone, dolomite and undifferentiated metamorphic rock. The bedrock aquifer is relatively impermeable, and can only provide adequate groundwater supplies for individual homes and small community systems. The highest bedrock yields are obtained from wells drilled into fractured and faulted bedrock. The majority of homes within a 4-mile radius of the site are supplied by individual wells drilled into the bedrock aquifer (Ref. 3, pp. 1-7; 4, pp. 1-7; 6, pp. 1-10; 10, p.1).

Shallow groundwater flow direction across the site is variable, generally conforming to the local topography. The terrain is hilly, with groundwater flowing toward Glowegee Creek (and its tributaries) and Hogback Brook. The aquifers of concern include the site surficial aquifer and underlying bedrock aquifer. While it is noted that the waste sources are located within till overburden, percolation of rainfall through the overburden may leach the contaminants downward into the underlying bedrock aquifer. Likewise, site contaminants may migrate downgradient into mapped (and unmapped) surficial aquifer(s) (Ref. 3, pp. 1-7; 4, pp. 1-7; 6, pp. 1-10).

There have been observed releases to groundwater in the overburden aquifer. The releases are established by the analytical results of samples taken from monitoring wells in the vicinity of the Security Area and the Hogback Road Landfill. Wells adjacent to the Security Area indicate the presence of tricholorethylene (21 ppb), tetrachloroethylene (4 ppb), trichlorofluoromethane (12 ppb), and ammonia (36,000 ppb) significantly above background (i.e. exceeding three times background or three times the detection limits (DL) if not detected in the background sample). Groundwater samples from the Hogback Road Landfill indicate the presence of trichlorethylene (3 ppb), 1,1-dichloroethane (3 ppb), manganese (180,000 ppb), and zinc (40 ppb) Ref. 21, pp. 9-23).

Although there have been observed releases to the groundwater pathway, there are no drinking water wells known to be located within the contaminated boundary of release. The nearest well used to supply drinking water is located between 1/2 and 1 mile from the site. A total of 119 people in this radius band obtain their water from wells. In addition, 1,951 in the 1-2 mile radius, 2,437 people in the 2-3 mile radius, and 2,277 people in the 3-4 mile radius draw their water supplies from private wells. The depths of these wells are variable, but they are all assumed to be drawing from the bedrock aquifer to have the greatest impact on the site evaluation (Ref. 3, pp. 1-7; 4, pp. 1-7; 6, pp. 1-10; 7, pp. 1-3; 10, p. 1; 26, p.1).

The site service well provides potable water to the 2,600 on-site workers. The well is located approximately 1 mile northeast of the Security Area and draws from the surficial deposits. Contamination from on-site sources is unlikely to impact on this water supply, since the well is hydraulically separated from the source areas (Ref. 2, pp. 10 an 15).

Surface Water Pathway

Three creeks drain the site, the Glowegee Creek, Crook Brook and Hogback Brook. The Kayaderosseras Creek joins the Glowegee Creek approximately one mile east of West Milton. Glowegee Creek is the primary receptor of the site's drainage. The annual average flow rate of the Glowegee Creek is 38.4 cubic feet per second (cfs) and the minimum recorded 7 day average flow rate for a 10 year period is 0.92 cfs. The average flow rate of the Kayaderosseras Creek is 139 cfs and the minimum 7 day average flow rate for a 10 year period is 20 cfs. The Crook Brook, the Glowegee Creek and the Kayaderosseras Creek are classified by the New York State Department of Environmental Conservation (NYSDEC) as Class C-T fresh surface waters. Class C-T fresh waters are defined as suitable for fish propagation and survival and for primary and secondary contact recreation, and suitable for trout survival. No information on Hogback Brook was available from the state, and a flow of 10 cfs was assumed. There are no surface water intakes along the 15 miles downstream of the point of entry. There are several wetlands located along the 15 miles downstream of the probable point of entry (PPE). The three creeks draining the site are known to be used for fishing. The total wetland frontage is approximately 5 miles (Ref. 1, pp. 18-19; 2, p. 3;10, p. 1; 11; 12, p. 1; 13, pp. 1-2; 14, p.; 15, p.1)

There has not been an observed release to the surface water pathway. Surface water and sediment samples collected from the Glowegee Creek show only naturally occurring radionuclides. Sediment samples collected in April 1993 from the Glowegee Creek and Hogback Brook did not indicate the presence of site related contamination at levels significantly above background (Ref. 2, p. 5; 24, pp. 1-29).

Soil Exposure Pathway

There are areas of observed contamination on site. However, access to the site is restricted (although only the Security Area is physically inaccessible due to the patrolled security fence) and there is no public recreation use. There is limited chance of exposure to the 2,600 workers who are present on a daily basis. The nearest residence is located between 1/2 and 1 mile from the site, and the population residing within 1 mile is only 119. There are no school or day care centers within 200 feet of the site. There are no terrestrially sensitive environments within 200 feet of the site (Ref. 1, pp. 9-15; 7, pp. 1-3; 17, p. 1; 19, p. 1).

Air Exposure Pathway

No releases to the air have been reported or documented. Migration of airborne particulates and gases from the source areas is possible, since none of the source areas have any containment features (except the Security Area, which is covered by maintained buildings and pavements). However, the site's remote location and the vegetation covering all source areas except the Hogback Road Landfill mitigate the impact. All current emissions are regulated by New York State permits. There are wetlands and fisheries located within 1/2 mile radius of the site. The population residing within a 4 mile radius is 6,784. There are no terrestrial sensitive environments within 1/2 mile of the site. (Ref. 1, p. 8; 2, p. 4; 7, pp. 1-3; 13, pp. 1-2; 19, p. 1; 23, pp. 1-2).

SUMMARY

The groundwater pathway is the major pathway of concern for the Kesselring site. There have been documented releases of organic and inorganic contaminants to the overburden aquifer from the Security Area and Hogback Road Landfill. These contaminants are attributable to past waste disposal practices that were employed by KAPL. Although groundwater is used as the principal source of drinking water in the area, most private wells are drilled into the bedrock aquifer. The site service well, which does draw from the surficial deposits, is hydraulically separated from the source areas. No wells are located within a boundary of contamination.

There is no evidence that the surface water, soil, and air exposure pathways pose any significant threat to the public or the environment. There have been no observed releases to the air or surface water. Site access is restricted and there is no public recreation use.

FEDERAL FACILITY ESI REVIEW REPORT
KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE

PART I: SITE INFORMATION

1. Site Name/Alias Knolls Atomic Power Laboratory - Kesselring Site

   Street Atomic Project Road

   City West Milton State New York Zip Code 12020

2. County Saratoga County Code 091 Cong.Dist. 24

3. EPA ID No. NY5890008993

4. Block No. 1 Lot No. 1

5. Latitude 43°02'30" Longitude 73°57'30"

   USGS uad. Middle Grove, New York

6. Owner U.S. Department of Energy Tel. No. (518) 395-6366

   Street P.O. Box 1069

   City Schenectady State New York Zip Code 12301

7. Operator General Electric Company Tel. No. (518) 395-6366

   Street Atomic Project Road

   City West Milton State New York Zip Code 12020

8. Type of Ownership

   O Private X Federal O State

   O County O Municipal O Unknown O Other

9. Owner/Operator Notification on File

   O RCRA 3001 Date: _____ O CERCLA 103C Date: _____

   O None X Unknown

10. Permit Information

Permit Number	Permit Type	Issuing Agency	In Compliance	Expiration Date	Other Information
NY 000 5843	SPDES	NY-DEC	Yes[3]	9/1/83	Site Outfalls
NY 5890008993	RCRA	NY-DEC	Yes	(6)	RCRA waste
(8)	SWMF	NY-DEC	(8)	(8)	Landfill
002 A & B*	AE	NY-DEC	Yes	5/31/91	Heating boiler
003*	AE	NY-DEC	Yes	5/31/91	Heating boiler
004*	AE	NY-DEC	Yes	5/31/91	Duplicating machine
006	AE	NY-DEC	Yes	5/31/91[8]	Shop exhaust
05A01	AE	NY-DEC	Yes	5/31/91[8]	Spray paint booth
05B01	AE	NY-DEC	Yes	3/21/91[8]	Welding hood
07401	AE	NY-DEC	Yes	5/31/91[8]	Welding hood
07402	AE	NY-DEC	Yes	5/31/91[8]	Welding hood
01801	AE	NY-DEC	Yes	7/23/94	Duplicating machine
01C01	AE	NY-DEC	Yes	11/21/93	Cleaning Process
01C02	AE	NY-DEC	Yes	11/21/93	Cleaning Process
03C01	AE	NY-DEC	Yes	11/21/93	Cleaning Process
03C02	AE	NY-DEC	Yes	11/21/93	Cleaning Process
06C01	AE	NY-DEC	Yes	11/21/93	Cleaning Process
T2001	AE	NY-DEC	Yes	11/23/93	Cleaning Process
T2002	AE	NY-DEC	Yes	11/21/93	Cleaning Process
86G01	AE	NY-DEC	Yes	11/21/93	Welding Hood
86D01	AE	NY-DEC	Yes	7/2/94	Carpentry Shop
86D02	AE	NY-DEC	Yes	3/14/95	Lagging Shop
09201	AE	NY-DEC	Yes	9/26/95	Welding Hood
TGC01	AE	NY-DEC	Yes	2/28/94	Cleaning Process
WBC01	AE	NY-DEC	Yes	8/20/94	Welding Hood
05C01	AE	NY-DEC	Yes	10/30/94	Cleaning Process
5-000070	BCSF	NY-DEC	Yes	7/19/91	Chemical Storage
414506	PBSF[12]	NY-DEC	Yes	8/17/92	Oil Storage
KAPL-188-01	RAE[13]	EPA-Region II	Yes	None	Service Facility
KAPL-288-01	RAE	EPA-Region II	Yes	None	Service Facility
KAPL-388-01	RAE	EPA-Region II	Yes	None	Service Facility
KAPL-488-01	RAE	EPA-Region II	Yes	None	Service Facility
KAPL-588-01	RAE	EPA-Region II	Yes	None	Service Facility
KAPL-688-01	RAE	EPA-Region II	Yes	None	Service Facility
KAPL-788-01	RAE	EPA-Region II	Yes	None	Service Facility

Notes:

(1) State Pollutant Discharge Elimination System
(2) New York State Department of Environmental Conservation
(3) Occasional excursions beyond permit limits identified and satisfactorily explained in periodic discharge monitoring reports issued in accordance with permit requirements.
(4) Currently operating under authorization to discharge beyond expiration renewal application submitted on 10/1/86.
(5) Resource Conservation and Recovery Act.
(6) Interim Status (Interim permission to operate authorized by cognizant agency). The permit number listed in the EPA identification number.
(7) Solid Waste Management Facility
(8) Operating permit applications or renewal applications being coordinated with NY-DEC.
(9) Air Emission
(10) National Pollutant Discharge Elimination System
(11) State of Connecticut, Department of Environmental Protection
(12) Petroleum Bulk Storage Facility
(13) Radionuclide Air Emission
(14) Bulk Chemical Storage Facility

*Emission point has been eliminated or no longer requires a NY-DEC permit. NY-DEC has been notified.

11. Site Status

X Active O Inactive O Unknown

12. Years of Operation 1949 to Present

13. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources:

Waste Unit No.	Waste Source Type	Facility Name for Unit
1.	Contaminated Soil	Security Area
2.	Surface Impoundment	Swan School Road
3.	Landfill	Baptist Hill Road
4.	Surface Impoundment	Silo Area
5.	Surface Impoundment	Parkis Mills Road
6.	Landfill	Hogback Road
7.	Contaminated Soil (1)	Current Fire Range
8.	Contaminated Soil (2)	Former Fire Range

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc., on site, describe the materials and identify their locations on site.

No other areas of concern were identified.

14. Information available from

Contact Helen Shannon Agency USEPA Tel No. (212) 264-6664
Preparer Howard Lazarus Agency Ebasco Date 03/22/94

PART II: WASTE SOURCE INFORMATION

WASTE UNIT NO. 1

Security Area. This area includes the main process buildings of the facility. Tritium has been detected in the soil and groundwater within this area. The 1989 EMR indicates that the levels of tritium detected in wells within this area are at or slightly higher than background levels. The tritium is believed to have leaked from a water holding tank. The Security Area is approximately 3.25×10^6 ft^2.

Ref. No. 1, pp. 9-10, 28; 2, p. 6

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 2

Swan School Road. This area was used for waste disposal in the mid-1950's. Battery acid from lead acid batteries was disposed of in the cellar of a former farmhouse located on Swan School Road. It is estimated that 3,000 pounds of battery acid was disposed of in this area. The waste contained sulfuric acid and lead.

Ref. No. 1, p. 11; 20, pp. 1-4

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 3

Baptist Hill Road. This area was used as a landfill for the disposal of clearing debris, asbestos pipe insulation, chemical, paint containers, and sealer residue. Allegedly, this area was used for disposal of wastes from 1951 to 1986. Reportedly, 193 tons of waste were disposed of in this area. According to the 1986 KAPL Installation Assessment Report, the asbestos and paint containers were later removed. The report did not specify the date and place of off-site disposal.

Ref. No. 1, p. 12; 22, p. 3

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 4

Silo Area. This area located on Lee Road, was used for burning sodium and waste oil and for disposal of components potentially contaminated with mercury from 1958 to 1966. It is estimated that up to 50 pounds of mercury were disposed of at this location. According to the 1986 KAPL Installation Assessment Report, the mercury-containing components were removed several years ago. The report did not specify the date and place of off-site disposal. In addition, some residual low level radioactivity is present in this area as a result of waste process operations conducted in this area in the 1950's and 1960's. It is estimated that 150 cubic yards of soil containing radioactivity remain in this area with an estimated radioactivity content of 0.05 curies. The predominant radionuclides are Co-60 and Cs-137.

Ref. No. 1, p. 13; 20, p. 6

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 5

Parkis Mills Road. This area was used for waste disposal about 1960. Battery acid was disposed of in the cellar of a former farmhouse located on Parkis Mills Road. It is estimated that 6,000 pounds of battery acid were disposed of in this area. The waste contained sulfuric acid and lead.

Ref. No. 1, p. 14; 20, pp. 1-4

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 6

Hogback Road Landfill. This area is the current site's landfill. It has been in operation since the early 1950's. Wastes reportedly disposed in this area include asbestos scraps, sheets and dust, lead bricks, sheets and wool, oil, oily water, paint, unspecified solvents, neutralized chemicals, scrap metal and laboratory analysis wastes. Reportedly, only 8 acres of land are used for the current landfill. It is estimated that 115 tons of waste were disposed of in this area. The wastes were solid, powder and liquid.

Ref. No. 1, p. 15

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 7

Current Firing Range. The facility operates a firing range for weapons training near the Baptist Road disposal area. A hillside has been used as a backstop for the range resulting in lead accumulations in the hillside. The range has been in operation since 1980. The estimated amount of lead in this area is approximately 2,000 to 3,000 pounds.

Ref. No. 1, p. 10

PART II: WASTE SOURCE INFORMATION (Cont'd)

WASTE UNIT NO. 8

Former Fire Range. The facility used this area for weapons training from 1968 to 1980. This area is adjacent to the Hogback Road landfill. The amount of lead accumulated in this area is approximately 200 pounds.

Ref. No. 1, p. 10

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. Describe the likelihood of the release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provided rationale for attributing them to the site. For observed release, define supporting analytical evidence.

   There are observed releases to groundwater in the overburden aquifer. Groundwater samples collected from the monitoring wells in the vicinity of the Security Area indicate the presence of trichloroethylene, trichlorofluoromethane, tetrachloroethene, and ammonia at levels exceeding three times the background or detection limit (if not detected in the background sample). Groundwater samples from the Hogback Road Landfill indicate the presence of 1,1-dichloroethane, trans-1,2-dichloroethene, trichloroethylene, magnesium, manganese, and zinc. The presence of the organic contaminants can be attributed to past site operations since solvents ware documented to have been used and disposed of onsite. Ammonia containing wastes are also documented to have been generated on site. Magnesium, manganese, and zinc are typically found in landfill leachate.

   Ref. No. 1, p. 33; 21, pp. 1-26.

2. Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.

   The Kesselring site is underlain by glacio-lacustrine, fluvial and till derived fluvial sand, gravel and till, which reaches thicknesses of up to 145.0 feet at well located adjacent Kayaderosseras Creek. Surficial mapping indicates that the majority of the 3,900 acre site is underlain by low permeability lake and till deposits. Water-bearing sand and gravel deposits are located along the trace of Kayaderosseras Creek, from which project site groundwater supplies are withdrawn. The site well field produces from two surficial aquifer units separated by a confining clay (lacustrine) layer. The upper surficial aquifer unit is under water table or unconfined conditions whereas the lower artesian aquifer is confined or artesian.

   The site surficial deposits (and aquifers) are in turn underlain by the bedrock aquifer, which locally consist of shale, sandstone, dolomite and undifferentiated metamorphic rock. The bedrock aquifer is relatively impermeable, and provides adequate groundwater supplies for individual homes and small community systems. The highest bedrock yields are obtained from wells drilled into fractured and faulted bedrock. The majority of homes within a 4 mile radius of the site are supplied by individual wells drilled into the bedrock aquifer.

   Shallow groundwater flow across the site is variable, generally conforming to the local topography. The terrain is hilly, with groundwater flowing toward Glowegee Creek (and its tributaries) and Hogback Brook from the described waste management units. The

aquifers of concern include the site surficial aquifer and underlying bedrock aquifer. While it is noted that the waste management units are located within till overburden, percolation of rainfall through the overburden may leach the contaminants downward into the underlying bedrock aquifer. Likewise, site contaminants may migrate downgradient into mapped (and unmapped) surficial aquifer(s).

Ref. No. 3, pp. 1-7; 4, pp. 1-7; 6, pp. 1-10

3. Is a designated well head protection area within 4 miles of the site?

There is no designated well protection area within four miles of the site.

Ref. No. 1, p. 17

4. What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?

The depth at which wastes were disposed of at the site is unknown. The water table at the site varies from 3 to 8 feet. Wastes may have been disposed of at or below the water table.

Ref. No. 1, pp. 16-17

5. What is the permeability value of the least permeable intervening stratum between the ground surface and the aquifer of concern?

The permeability of the surficial deposits overlying the aquifer of concern varies from 1x 10^{-7} to 2.2 x 10^{-3} cm/sec.

Ref. No. 1, p. 16

What is the net precipitation for the area?

The net precipitation for the area is 9 inches.

Ref. No. 1, p. 17

What is the distance to and depth of the nearest well that is currently used for drinking purposes.

The nearest wells used for drinking water are private wells located between 1/2 mile and 1 mile from the site. The depths of these wells are unknown. The site service well is screened in the overburden and is located approximately 1 mile from the Security Area.

Ref. No. 2, pp. 10 and 15; 7, pp. 1-3

8. If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contaminated boundary of release.

No wells are known to be located within the contaminated boundary of release.

Ref. No. 2, pp. 10 and 15, 7, pp. 1-3

9. Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.

Distance	Overburden Population	Bedrock Population
0-1/4 mi	0	
1/4-1/2 mi	0	
1/2-1 mi	2,600	119
>1-2 mi	0	1,951
>2-3 mi	0	2,437
>3-4 mi	0	2,277
Total	2,600	6,784

The population residing within the four mile radius of the site uses individual or water supply wells for drinking purposes. The facility, which employs 2,600 workers, utilizes an on-site wellfield for drinking and non-contact cooling purposes.

Ref. No. 2,pp. 10 and 15; 7, pp. 1-3;

10. Identify uses of groundwater within 4 miles of the site (i.e., private drinking source, municipal source, commercial, irrigation, unusable.

Groundwater within 4 mile radius of the site is used for private potable water supplies, non-municipal community system, livestock and commercial purposes. The on-site wellfield is used for drinking and non-contact cooling purposes.

Ref. No. 1, p. 17

SURFACE WATER ROUTE

11. Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, of none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.

Surface water and sediment samples collected from the Glowegee Creek show only naturally occurring radionuclides. Sediment sampling, performed in April 1993, did not indicate the presence of site related contamination at levels significantly above background.

Ref. No. 2, p. 5; 24, pp. 1-29

12. Identify the nearest downslope surface water if possible, include a description of possible surface drainage patterns from the site.

Three named creeks, in addition to intermittent and unnamed surface waters, drain the Kesselring site. Glowegee Creek is the primary receptor of the site's drainage. Based upon topographic mapping, this stream may receive runoff from each of the waste areas at the site. Glowegee Creek also receives drainage from the site Security Area. The Hogback Road Landfill and Parkis Mills Road Cellar Hole are within 1,000 feet of Glowegee Creek. The other three waste units (Swan School Road Cellar Hole, Baptist Hill Road Landfill, and the Silo Area) are within 1 mile of this surface water. In some instances, runoff from the waste areas may also reach Glowegee Creek via tributaries or intermittent surface waters. Drainage from the Hogback Road Landfill may also reach Hogback Brook. Discharge points to Glowegee Creek from the Security Area include two surface channels, a stormwater runoff drain, a sewage treatment plant drain line, and possibly, an intermittent surface water. Kayaderossras Creek, which is east of the site and partially borders the eastern site boundary, recharges a wellfield that serves the facility.

Glowegee Creek joins Kayaderosseras Creek at a point approximately 1.2 miles east of the site. Crook Brook, north of Glowegee Creek, also receives drainage from the site. Crook Brook joins Kayaderosseras Creek at a point adjacent to the site wellfield. Kayaderosseras Creek discharges to Saratoga Lake approximately 8 miles downstream of the Kesselring facility.

Ref. No. 1, pp. 18-19; 2, p. 3; 11

13. What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow:

Based on topographic mapping, the nearest surface water to any of the on-site disposal areas is the Hogback Brook. The Hogback Brook is approximately 700 feet from the Hogback Road landfill.

Ref. No. 1, pp. 18-19

14. Define the floodplain that the site is located within.

Approximately 100 feet to either side of the Glowegee Creek is within the 100-year floodplain, 100-200 feet to either side of the Kayaderosseras Creek is within the 100-year floodplain. The remainder of the site lies outside the 500-year floodplain.

Ref. No. 9, pp. 1-2

15. What is the 2-year 25-hour rainfall?

The 2-year 24-hour rainfall is 2.75 inches.

Ref. No. 5, p. 2

16. Identify drinking water intakes in surface waters within 15 miles downstream of the site. For each intake identify the distance from the point of surface water entry, population served, and stream flow at the intake location.

There are no drinking water intakes within 15 miles downstream of the site.

Ref. No. 10, p. 1

17. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following:

Fishery	Water Body Type	Flow (cfs)
Crook Brook	Class C-T	NA
Glowegee Creek	Class C-T	35.9 cfs
Kayaderosseras Creek	Class C-T, C	138.0 cfs

Class C-T fresh surface water is defined as suitable for fish propagation and survival, and for primary and secondary contact recreation. The T defines the stream as being suitable for trout survival.

The Kayaderosseras Creek is classified as C-T from the headwaters to Gordon Creek (near Ballston Spa), and Class C downstream from that point to the mouth.

Ref. No. 11; 12, p. 1; 13, pp. 1-2; 14, p. 1; 15, p. 1

18. Identify sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:

Environment	Water Body Type	Distance	Flow (cfs)
Crook Brook	Class C-T	on-site	NA
Glowegee Creek	Class C-T	on-site	35.9 cfs
Kayaderosseras Creek	Class C-T, C	adjacent	138.0 cfs

Environment	Distance	Environment	Distance
Wetland M-22	on-site	Wetland S-39	10.2 miles
Wetland M-20	on-site	Wetland S-42	10.2 miles
Wetland M-25	on-site	Wetland M-28	5.0 miles
Wetland M-24	on-site	Wetland M-29	5.0 miles
Wetland M-26	on-site	Wetland S-27	10.8 miles
Wetland M-31	on-site	Wetland S-28	11.0 miles
Wetland M-32	on-site	Wetland S-28	11.3 miles
Wetland M-57	on-site	Wetland S-29	11.4 miles
Wetland M-33	on-site	Wetland S-26	14.0 miles
Wetland M-34	on-site	Wetland S-34	14.7 miles
Wetland M-56	on-site	Wetland Q-11	15.0 miles
Wetland M-36	on-site	Wetland S-24	14.8 miles
Wetland M-27	on-site	Saratoga Spa St. Park	12.0 miles
Wetland M-55	on-site		

All wetlands listed are NYSDEC regulated. NYSDEC regulated wetlands must meet the definition as provided in Article 24-0107(1) of the NY Freshwater Wetlands Act and have an area of at least 12.4 acres, or, if smaller, have unusual local importance as determined by the commissioner pursuant to Section 24-0301(1) of the act (NYSDEVC, 1980).

The above information was obtained from NYSDEC Freshwater Wetlands Maps and USGS (1992). All distances listed are approximate distance from the site as measured on USGS Middle Grove and Saratoga Springs, NY Quadrangles.

Ref. No. 11; 12, p. 1; 13, pp. 1-2; 14, p. 1; 15, p. 1; 16, p. 1

19. If release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 16-18 that are or may be located within the contamination boundary of the release.

No documented release to surface water has been observed.

SOIL EXPOSURE PATHWAY

20. Determine the number of people that occupy residence or attend school or day care on or within 200 feet of the site property.

There are no residents, schools or daycare centers within 200 feet of the site or area of suspected contamination.

Ref. No. 7, pp. 1-3; 17, p. 1

21. Determine the number if people that work on or within 200 feet of the site property.

There are 2,600 workers on-site.

Ref. No. 18, p. 1

22. Identify terrestrially sensitive environments on or within 200 feet of the site property.

No terrestrially sensitive environments are known to exist on or within 200 feet of the site or area of suspected contamination.

Ref. No. 19, p. 1

AIR EXPOSURE PATHWAY

23. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.

No releases to air have been documented.

Ref. No. 2, p. 4

24. Determine populations that reside within 4 miles of the site.

Distance	Population
0-1/4	0
>1/4-1/2 mi	0
>1/2-1 mi	119
>1-2 mi	1,951
>2-3 mi	2,437
>3-4 mi	2,227

Ref. No. 7, pp. 1-3

25. Identify sensitive environments and wetlands acreage within 1/2 mile of the site.

Sensitive Environment Type	Distance	Acreage
Wetland M-22	on-site	23.2
Wetland M-20	on-site	21.8
Wetland M-25	on-site	26.1
Wetland M-24	on-site	23.7
Wetland M-26	on-site	32.3
Wetland M-31	on-site	19.9
Wetland M-32	on-site	17.5
Wetland M-57	on-site	8.1
Wetland M-33	on-site	13.5
Wetland M-34	on-site	24.2
Wetland M-56	on-site	7.2
Wetland M-36	on-site	15.6
Wetland M-27	on-site	24.2
Wetland M-49	800'	53.1

Sensitive Environment Type	Distance	Acreage
Wetland M-37	1600'	66.4
Wetland M-23	1200'	29.9
Wetland M-55	adjacent	44.6
Wetland M-35	1000'	18.5
Wetland M-30	1500'	15.2
Crook Brook	on-site	
Glowegee Creek	on-site	
Kayaderossras Cr.	adjacent	

All distances and acreage are approximate, as measured from NYSDEC Freshwater Wetlands Maps. For regulated wetlands which lie partially within the 1/2 mile radius, the total wetland area (in and out of the specified radius) is given.

Ref. Nos. 13, pp. 1-2; 19, p. 1

26. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of the air contamination from the release.

No air releases have been documented.

Ref. No. 2, 4

27. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 25, that are or may be located within the area of air contamination from the release.

No air releases have been documented.

Ref. No. 2, p. 4

CONFIDENTIAL

NOT FOR PUBLIC RELEASE

RECOMMENDATION AND SCORING SUMMARY

Based upon information contained in the site file and additional material collected, the following conclusions about the Knolls Atomic Power Laboratory - Kesselring Site were drawn:

The overall site score is 14.34. The site has seven identified source areas. These are the Security Area, Parkis Mill Road Cellar, Swan School Road Cellar, Silo Area, Hogback Road Landfill, Firing Range 1, and Firing Range 2. The Baptist Hill Road Landfill was not included in the scoring because there is no evidence that hazardous wastes were disposed of in the landfill. A sensitivity analysis of the waste areas indicates that the Hogback Road Landfill and Security Area have the greatest impact on the site score due to observed releases of organic and inorganic contaminants from these sources. There is no analytical evidence that radioactive contamination has been released.

The groundwater pathway is the main pathway of concern with a score of 28.59. An observed release to the overburden aquifer has occurred. Samples taken from the monitoring wells in the vicinity of the Security Area and Hogback Road Landfill indicate the presence of organic (trichloroethylene, trichlorofluoromethane, tetrachloroethene, 1,2-dichloroethane, 1,1-dichloroethene) and inorganic (ammonia, manganese, and zinc) contaminants at levels exceeding three times the background concentrations. Groundwater drawn from the overburden aquifer is used to supply potable water to 2,600 on-site workers, however there is a low probability for site contamination to reach the site service well, located approximately 1 mile from the Security Area, since the two areas are not hydraulically connected. The contaminants released to the groundwater have not been detected in samples taken from the service well. Approximately 6,784 residents within a 4-mile radius of the site obtain their drinking water from private wells. There is no reliable information available pertaining to the depth of these wells. According to the Capital District Region Planning Commission (the source of the groundwater population information), wells in the area vary in depth due to the complexity of the geology. However, the results of a sensitivity analysis indicate that the greatest impact on the site evaluation (i.e. produced the highest score) is achieved by assuming all wells draw from the bedrock aquifer. The bedrock aquifer was evaluated on a potential-to-release basis. Although no bedrock groundwater samples were taken, the site score would not change if site related contaminants were detected in an on-site bedrock monitoring well since the groundwater pathway is already evaluated on an observed release to the overburden aquifer. Therefore, the installation of bedrock monitoring wells is not recommended.

No samples have been taken from off-site wells drawing from either aquifer. If contamination exceeding the drinking water MCLs (Level I) was detected in a private, off-site well, the site score would only increase to 22.01, regardless of the aquifer affected. Due to the low levels of contaminants detected in monitoring wells on-site and

the dispersion and dilution of contaminants that would occur during transport in a groundwater system, the likelihood of detecting Level I contamination in an off-site well is considered extremely low. Therefore, sampling of off-site wells is not recommended.

The surface water pathway score is 2.40 based upon the overland flow route. Sediment sampling of the on-site creeks performed in April 1993 indicates that there is no observed release of contaminants to surface waters. There are no drinking water intakes along the 15-mile target distance limit (TDL), however the waterways (Glowegee Creek, Kayaderossas Creek, and Saratoga Lake) are used extensively for fishing and recreation. There are 310.0 acres of wetlands on site. There are no endangered species or critical habitats along the 15-mile TDL.

The soil pathway score is 0.00. There are 2,600 on-site workers. The nearest residents are located between .5 and 1 mile from the site. The Security Area is a restricted area and is inaccessible to the public. The other source areas are outside of the restricted area and are therefore physically accessible to the public. However, the entire site is patrolled by the security force and recreational use is prohibited. There are no terrestrial sensitive environments, schools, or day care facilities within 200 feet of the site.

The air pathway score is 0.27. There is no evidence of an observed release of contaminants from the source areas to the air pathway. All current releases from active facilities are regulated under New York State permits. There are 310.4 acres of wetlands on site and 174.6 acres within the 1-mile TDL. There are 6,784 residents within a four mile radius of the site.

The above information supports a recommendation of SITE EVALUATION ACCOMPLISHED (SEA) for the Knolls Atomic Power Laboratory - Kesselring Site. The following is a definition of SEA: To the best of EPA's knowledge, Superfund has completed its assessment at a site, and has determined that no further steps to list this site on the NPL will be taken unless information indicating that this decision was not appropriate or other considerations make a recommendation for listing appropriate at a later time. A "SEA" decision does not necessarily mean that there is no hazard associated with a given site; it means only that based upon available information, the location is not judged to be a potential NPL site.

ite Name: Knolls Kesselring
s entered in CERCLIS)

ite CERCLIS Number: NY5890008993

ite Reviewer: Ebasco Services Inc

ate: 3/21/94

ite Location: West Milton/Saratoga, NY
City/County,State)

ongressional District: 24

.te Coordinates: Single

titude: 43 02'30. Longitude: 73 57'30.

	Score
Ground Water Migration Pathway Score (Sgw)	28.59
Surface Water Migration Pathway Score (Ssw)	2.40
Soil Exposure Pathway Score (Ss)	0.00
Air Migration Pathway Score (Sa)	0.27
Site Score	14.34

NOTE

'A uses the terms "facility," "site," and "release"
terchangeably. The term "facility" is broadly defined in CERCLA
include any area where hazardous substances have "come to be
cated" (CERCLA Section 109(9)), and the listing process is not
tended to define or reflect boundaries of such facilities or
leases. Site names, and references to specific parcels or
operties, are provided for general identification purposes only.
owledge regarding the extent of sites will be refined as more
formation is developed during the RI/FS and even during
plementation of the remedy.